TAKEDO®-3VF V20

INSTRUCTION MANUAL

5	16-02-2015	
REL.	DATE	T.M. Check and Approval

www.sms.bo.it

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1 – INTRODUCTION

TAKEDO-3VF V20 is a new type of drive with **built-in EMC filter**, responding to the European Directives 2004/108/EC (EMC) and 2006/95/EC (Low Voltage Equipment).

The inverter can operate only in open loop condition.

This manual provides you with the **essential information** about the connections in the control panel and the inverter operation (use of the keypad, parameter and fault message list).

Complete Information for the application can be found in the original INSTALLATION MANUAL from VACON (inverter series **Vacon 20 Cold Plate**) available on the site **www.vacon.com.**

2 – SAFETY WARNINGS AND CAUTIONS

For everything related to the warnings about **personal safety** and prevention of **accidental damage to any product or equipment** connected to it, refer to Chapter **"SAFETY"** of the original INSTALLATION MANUAL from VACON (inverter series **Vacon 20 Cold Plate**) available on the site **www.vacon.com**, where you can also find the "Declaration of Conformity", reported, however at the end of this document.

Read this manual carefully and in its entirety before powering up the equipment.

With regard to the specific application on lifts, please consider carefully the following points:

1- **The leakage current from the inverter to earth is greater than 30mA**, and accordingly, the power circuit must incorporate a residual current device with **I_d no less than 300mA, type B or type A**. Regulations require that the connection to earth are made with cable of not less than 10 mm² section. **If the residual current device should trip closing the main power switch, do not perform this operation repeatedly because this could lead to permanent damage to the inverter drive**. Check that the residual current device is rated at least 300mA.

2- To avoid damaging the inverter in case of prolonged stoppages with no power supply, before restarting the drive proceed as follows:
- **If the inverter has been idle for several months, connect it to the power supply for at least 1 hour in such a way as to recharge the bus capacitors.**
- **If the inverter has been idle for more than one year, supply it for 1 hour with a level of voltage 50% lower than the nominal input voltage, and then supply it with the nominal input voltage for 1 hour.**

3- It is advisable to balance the system at 50%. If balanced at 40%, the UP current under full load will be greater, and it could be necessary to select a drive with a higher specification than the normally needed ones.

3 – CONNECTING THE POWER CIRCUIT

L1; L2; L3	A.C. Power Input	Connect the three phases of the power supply to this three terminals, in any order.
U/T1;V/T2; W/T3	Inverter output	Connect the three output phases to the contactors, then to the motor
DC+;BR	External Braking Resistor	Connect the external braking resistor
⏚	Earth	Connect to the building earth system

With regard to the cable dimensioning and the terminal position, please refer to the Chapter “POWER CABLING” of the original INSTALLATION MANUAL from VACON (inverter series **Vacon 20 Cold Plate**) available on the site **www.vacon.com.**

INVERTER V20 400 VOLT (380 – 480V)

RATED CURRENT (A)	MAXIMUM CURRENT (A)	CODE	DIMENSIONS WxHxD (mm)	FUSES gG/gL (A)	BRAKING RESISTOR		
					SUPPLIED BY SMS (Ω) - (W)	MINIMUM VALUE RECOMMENDED (Ω)	DIMENSIONS WxDxH (mm)
12	24	TKV00124	175x275x140	20	65Ω – 500W (004.16.W0065)	50	200x35x30
16	32	TKV00164	175x275x140	25	N°2 33Ω - 500 W series connected (004.16.W0033 x 2)	50	200x35x30

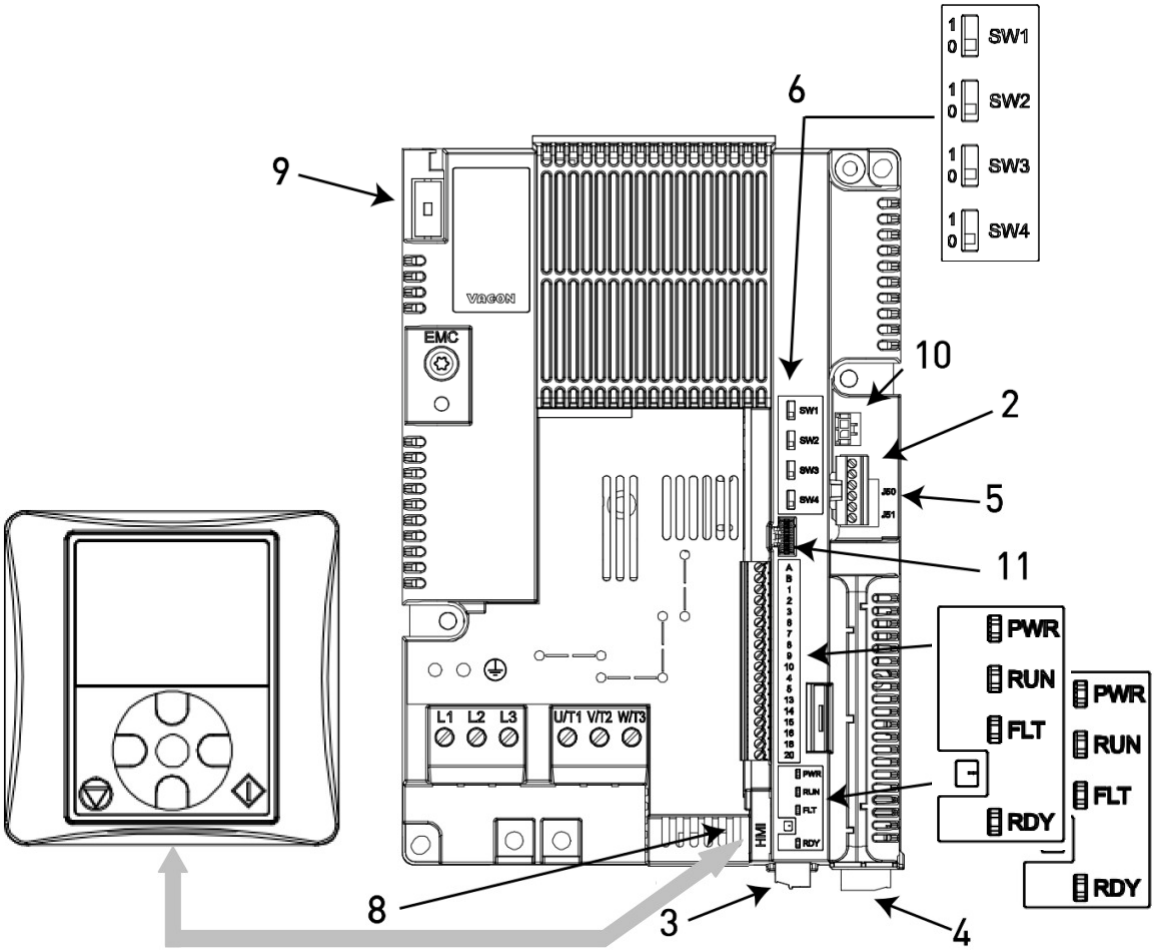
TABLE 1 *– Current, fuses and braking resistors – mains voltage 380 – 480V*

INVERTER V20 230 VOLT (208 – 240V)

RATED CURRENT (A)	MAXIMUM CURRENT (A)	CODE	DIMENSIONS WxHxD (mm)	FUSES gG/gL (A)	BRAKING RESISTOR		
					SUPPLIED BY SMS (Ω) - (W)	MINIMUM VALUE RECOMMENDED (Ω)	DIMENSIONS WxDxH (mm)
17,5	35	TKV00172	175x275x140	25	33Ω - 500 W (004.16.W0033)	25	200x35x30

TABLE 2 *– Current, fuses and braking resistors – mains voltage 208 – 240V*

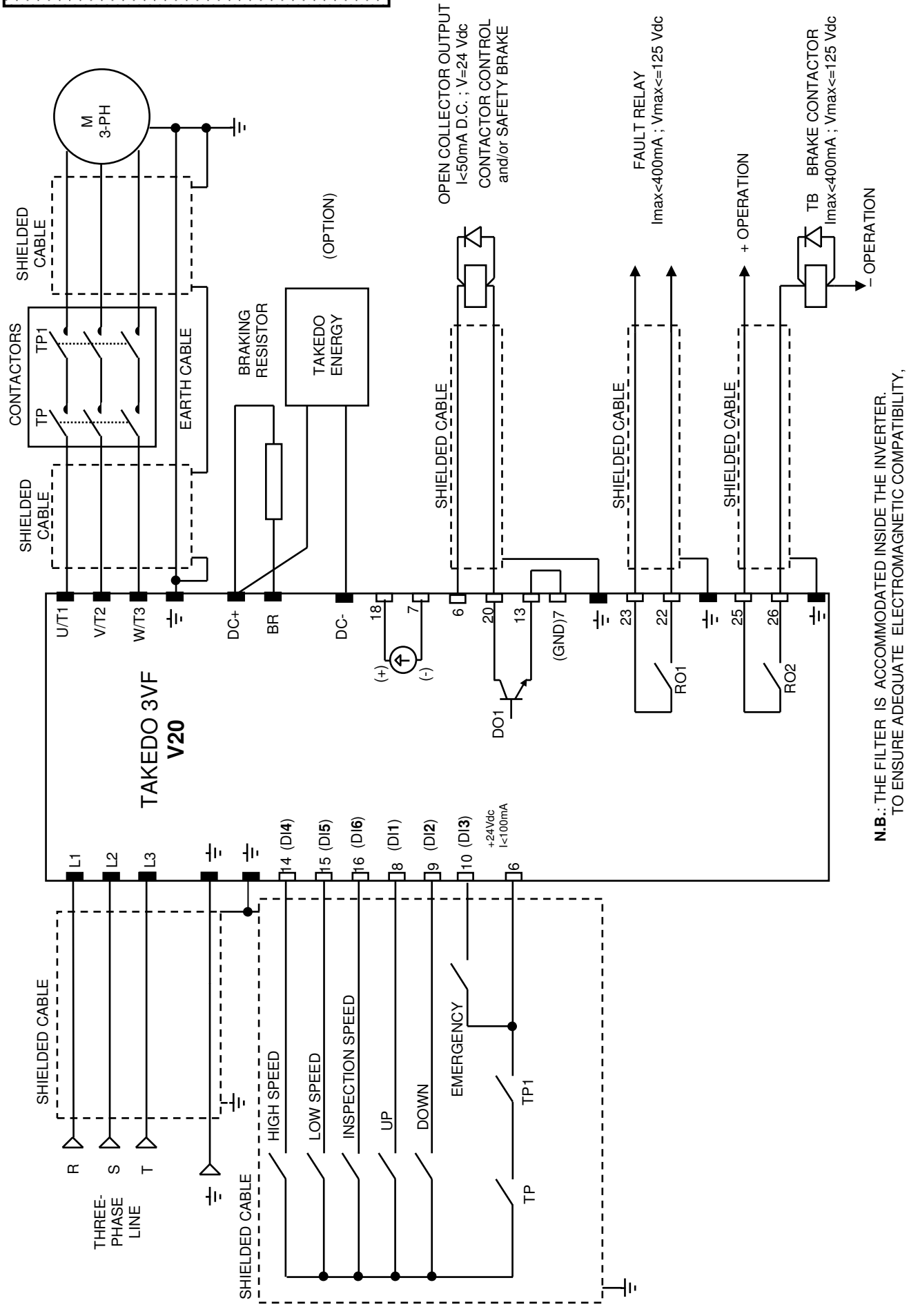
4 – CONTROL CIRCUITS



Number	Meaning
1	Control Terminals A-20
2	STO Terminals
3	Relay Terminals
4	Option Board Terminals
5	STO Jumpers
6	DIP Switches: **SW1** in position **0,** the common of the digital inputs (8-10 e 14-16) is connected to the ground (default position); in position **1,** the common above is **isolated** from ground. **SW2** AI1 analogue input operating mode; **SW3** AI1 analogue input operating mode; in position **0**, the selected analogue input works in current mode; in position **1**, the analog input works in voltage mode (default position); the voltage range is 0…10V and the current range is 0/4…20mA. **SW4** used for bus termination, related to the RS485 connection; in position **0**, the termination resistance is connected; in position **1** is not connected (default position).
7	Status Led: "PWR" Orange the drive is supplied by mains "RUN" Green the drive is running "FLT" Red the drive is in fault "RDY" Orange the drive is ready and no fault is present it starts blinking when a warning is active
8	**HMI connector (RJ45 keypad connector)**
9	Braking Resistor Terminals
10	Supply Voltage connector for fan
11	Control Terminals A-20 Remote Connector

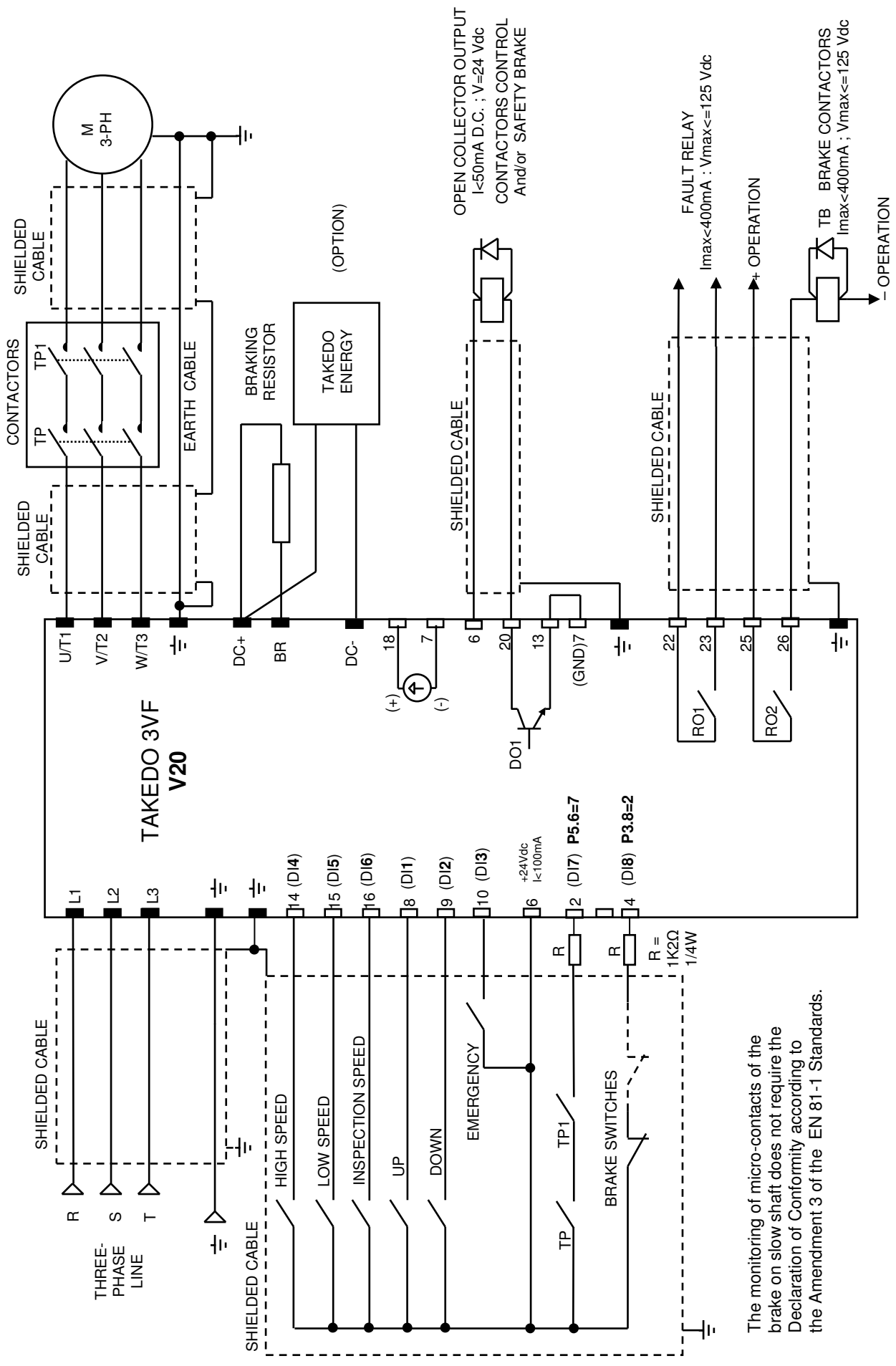
5 – APPLICATION DRAWING

5.1 – WITHOUT ENABLE LOGIC



N.B.: THE FILTER IS ACCOMMODATED INSIDE THE INVERTER.
TO ENSURE ADEQUATE ELECTROMAGNETIC COMPATIBILITY,
THE INPUT AND OUTPUT CABLES **MUST BE SHIELDED.**.

5.2 – WITH ENABLE LOGIC AND BRAKE SWITCH CONTROL



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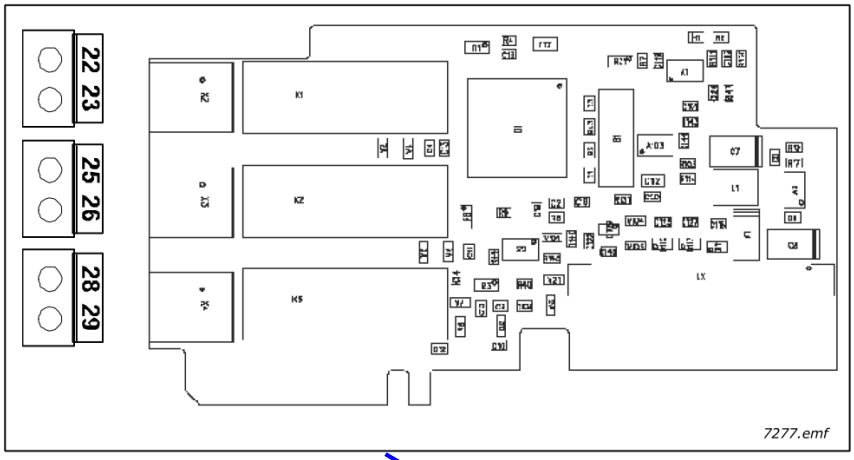
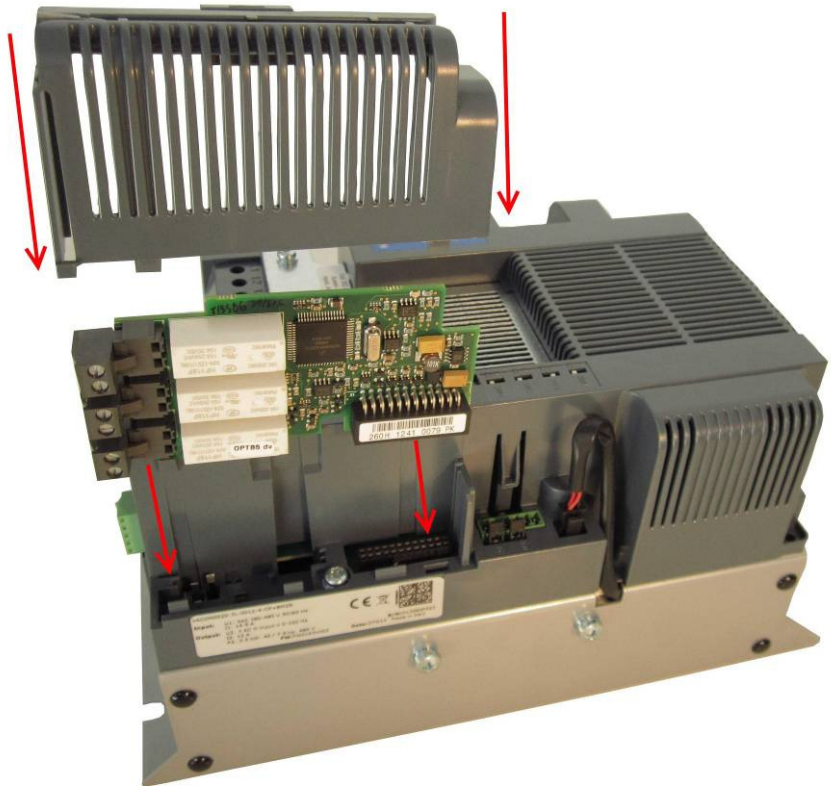
TO ENSURE ADEQUATE ELECTROMAGNETIC COMPATIBILITY,
THE INPUT AND OUTPUT CABLES **MUST BE SHIELDED.**

6 – NXOPTB5 EXPANDER BOARD (OPTION)

The NXOPTB5 board allows you to add N° 3 RELAY OUTPUTS.





Terminals	Function	DEFAULT Setting (*)	Contact Technical Information
22 - 23	RO1 - N.O. Contact	P6.10 = 4 CONTACTORS	Switching capacity: 24VDC/8A 250VAC/8A 125VDC/0,4A Min. switching load: 5V/10mA
25 - 26	RO2 - N.O. Contact	P6.11 = 4 CONTACTORS	
28 - 29	RO3 - N.O. Contact	P6.12 = 5 FREQUENCY SUPERV.	

(*) See Page 12 for other possible settings.

7 – EMERGENCY (EVACUATION) OPERATION

TAKEDO-3VF V20 can work supplied by batteries, or by an UPS (uninterruptible power supply), to move the car and bring it to the floor in case of mains power supply failure.

The minimum voltage of the batteries is 96V, furthermore is necessary an auxiliary voltage 230Vac 50/60Hz to enable the inverter control logic (current about 300mA).
Alternatively, the UPS must have 230Vac 50/60Hz output, adequate power.

The emergency operation is activated by enabling the input 10 and the parameters for the management of emergency operation are in GROUP 9.

P9.1 EMERGENCY MODE:

0 = NOT USED Emergency Disabled

1 = MANUAL It does not select the favourable run direction;
The motor follows the run direction the inverter is commanded for.

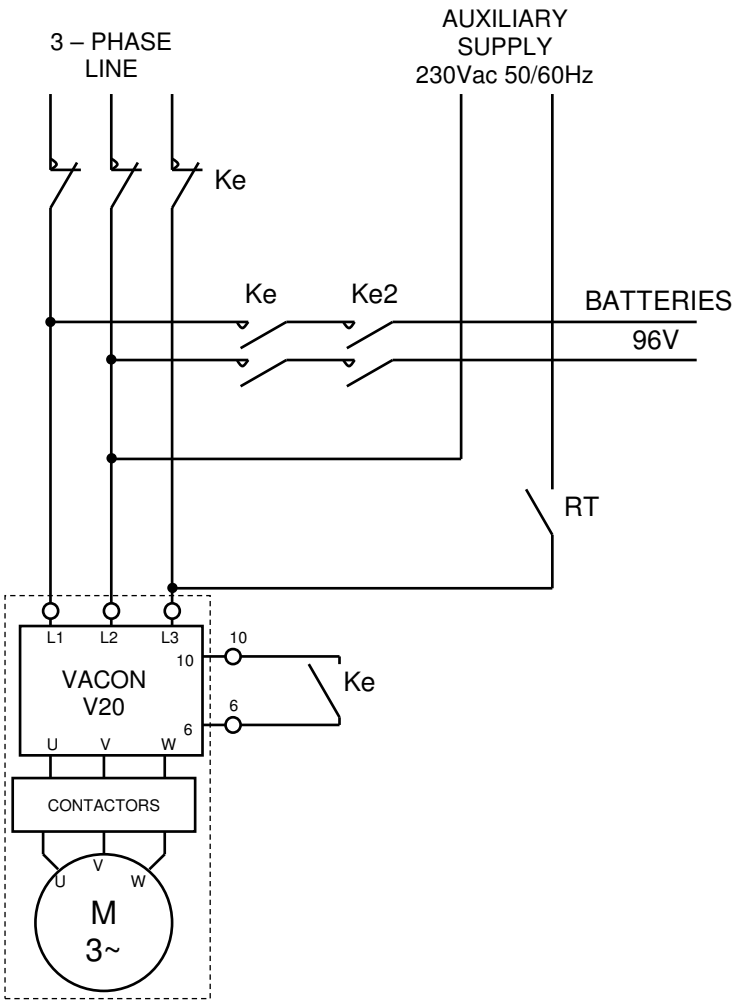
2 = AUTOMATIC It selects the favourable run direction;
The inverter allows for the quick rotation of the motor in both run directions and then chooses the most favorable run direction.

P9.2 EMERGENCY MAXIMUM FREQUENCY:
It is the maximum speed of the motor, whatever the speed level activated (high, low, inspection, etc.).

7.1 – COMMAND SEQUENCE FOR EMERGENCY OPERATION WITH 96V BATTERIES

Be sure that mains power and emergency power (batteries or UPS) can't be never simultaneous, and the exchange between one to the other power is delayed at least by a 2 seconds interval.

Plese follow carefully the indications below, looking to the figure:



1) After a few seconds from mains supply failure, it is necessary to cut off the mains power of the inverter and of the control panel.
   On the left figure, the energization of Ke contactor cuts off the inverter power and closes the contact between terminals 6/10, to indicate to the inverter that the emergency operation is required.
2) After about 2 seconds from Ke energization, power again the control panel and activate the RT relay, that has to stay active for 3 seconds, so that during this time the terminals L2 – L3 are supplied by 230Vac voltage.
   Once RT relay is de-energized, Ke2 contactor will energize, powering L1 – L2 terminals with battery voltage.
3) The control panel can now start its operation like in normal condition.
   By means of a car call or a reset operation, the control panel will provide the run and speed level commands to the inverter: the car will be brought to the desired floor or to the first encountered floor, depending on the setting of the parameter P9.1.
4) At the end of the emergency operations, inverter has to be un-powered from batteries (contactor Ke2 de-energized).
5) After 2 seconds more, inverter power and control panel power have to be reconnected to the mains (through Ke de-energizion) to allow the normal operation restore.

In case of mains power restart during emergency, it is recommended to bring to the end the emergency cycle.

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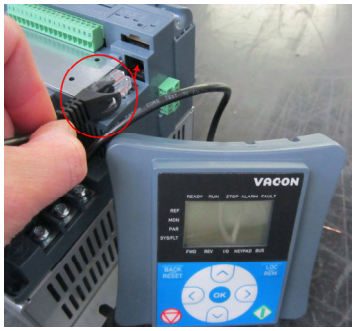
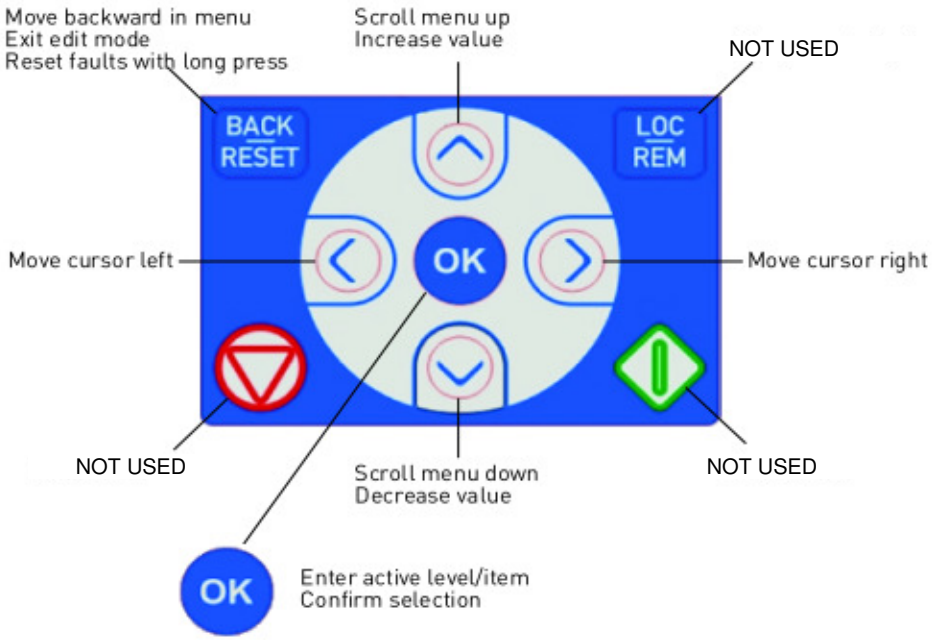
8 – KEYPAD AND PROGRAMMING

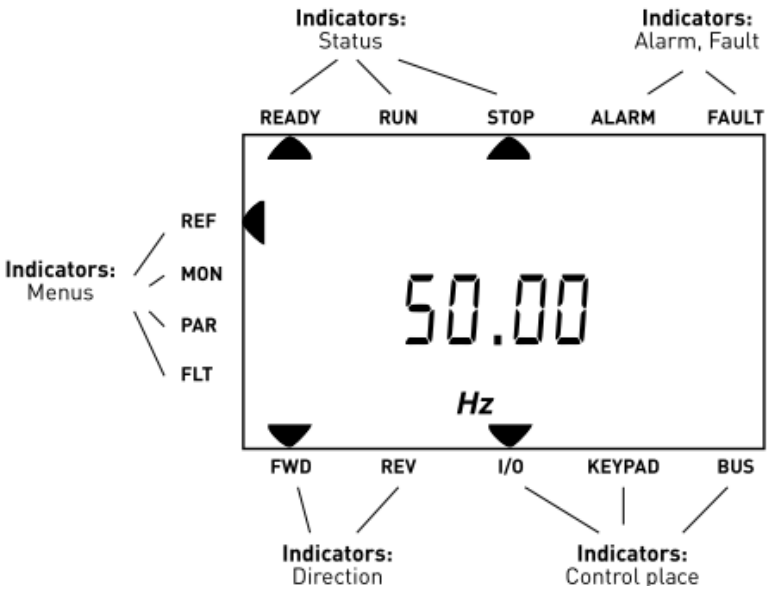
The control keypad is the interface between TAKEDO-3VF V20 and the user, and must be connected to the connector shown in the figure, via the cable supplied.



With the keypad it's possible to check the status of the motor and the inverter, and to set the drive parameters.
The BUTTON section is shown in the following picture:



The DISPLAY section indicates the status of the motor and the drive, and any irregularities in motor or drive functions.
On the display, the user can see the information about his present location in the menu structure and the item displayed.



8.1 – MENU STRUCTURE

The data on the control keypad are arranged in menus:

- Use the UP and DOWN arrows to move between the menus.
- Enter the group/item by pressing the OK button and return to the former level by pressing the BACK/RESET button.

The arrow on the left of the display shows the active menu.

The TABLE below shows the structure of the main menu:

Reference from keypad	**Reference (REF)**
Monitoring values	**Monitor (MON)**
Application Parameters	**Parameters (PAR)**
Active Fault (divided into ACTIVE FAULT and HISTORY FAULT)	**Fault (FLT)**

8.2 – USING THE KEYPAD

7.2.1 EDITING VALUES

To change the value of a parameter, follow the procedure below:

1. Locate the parameter
2. Enter the Edit mode by pressing OK
3. Set new value with the Arrow buttons UP/DOWN.
   You can also move from digit to digit with the Arrow buttons LEFT/RIGHT.
4. Confirm change with ok button
   (or ignore change by returning to previous level with BACK/RESET button).

8.2.2 RESETTING FAULT

When a FAULT appears and the drive stops, examine the cause of the fault using the TABLE at Chapter 10 – ACTIVE FAULTS, then reset the Fault by pressing the BACK/RESET button for a while.

9 – MONITOR MENU

This menu allows to see some data during the inverter operation and it is divided into 2 sub-menu.

Contents	Description			Contents	Description		
1 – Motor							
V1.1	Output Frequency			V1.6	Motor Power		
V1.2	Frequency Reference			V1.7	Motor Voltage		
V1.3	Motor Speed			V1.8	Motor Temperature		
V1.4	Motor Current			V1.9	Actual Output Frequency		
V1.5	Motor Torque						
2 – Inverter							
V2.1	DC Link Voltage			V2.7	RO1 Fault (term.22-23)	RO2 Brake (term.25-26)	DO1 Contactors (term.6-20)
V2.2	Unit Temperature			V2.8	Analog Output		
V2.3	Board Temperature			V2.9	Anticipated contactor openings at stop		
V2.4	DI1 Up (term.8)	DI2 Down (term.9)	DI3 Emergency (term.10)	V2.10	Board NXOPTB5 programmable outputs: RO1 Contactors	RO2 Contactors	RO3 Frequency Superv.
V2.5	DI4 High (term.14)	DI5 Low (term.15)	DI6 Inspection (term.16)				
V2.6	DI7 (term.2)	DI8 (term.4)	STO (term.STO)				

10 – PARAMETER MENU (Default Values for 400V series)

Par.	Description	Unit	Default	Value
1 – BASIC PARAMETERS				
P1.1	Current limit	A	1,8 x Inv	
P1.2	Motor nominal voltage	V	400	
P1.3	Motor nominal frequency	Hz	50	
P1.4	Motor nominal speed	rpm	1380	
P1.5	Motor nominal current	A	0,8 x Inv	
P1.6	Motor Cos Phi		0,76	
P1.7	Identification		0	
2 – CONFIGURATION				
P2.1	Maximum frequency	Hz	50	
P2.2	Acceleration time	s	2,5	
P2.3	Deceleration time	s	2,0	
P2.4	Final deceleration time	s	0,5	
P2.5	V1 High speed	Hz	50	
P2.6	V2 Low speed	Hz	5	
P2.7	V3 High + Low speed	Hz	30	
P2.8	V4 Inspection speed	Hz	25	
P2.9	V5 High + Inspection speed	Hz	25	
P2.10	V6 Low + Inspection speed	Hz	25	
P2.11	V7 High + Low + Inspection speed	Hz	25	
P2.12	Ramp shape	s	1,20	
P2.13	Smooth start frequency	Hz	0,00	
P2.14	Smooth start time	s	0,00	
P2.15	Manual doors		0	
3 – BRAKE CONTROL				
P3.1	DC braking current	A	0,7 Iinv	
P3.2	DC braking time at start	s	0,00	
P3.3	DC braking time at stop	s	0,40	
P3.4	DC braking frequency	Hz	1,50	
P3.5	Brake open current	%	10,0	
P3.6	Brake open delay	s	0,00	
P3.7	Brake close delay	s	0,30	
P3.8	Brake 1 logic		0	
P3.9	Brake 2 logic		0	
4 – DRIVE CONTROL				
P4.1	Brake chopper		1	
P4.2	Brake chopper threshold	V	650	
P4.3	Motor control mode		1	
P4.4	Switching frequency	kHz	8,0	
P4.5	Torque boost		1	
P4.6	U/f ratio selection		2	
P4.7	Field weakening point	Hz	50	
P4.8	Voltage at field weakening point	%	100	
P4.9	U/f curve mid point frequency	Hz	1,75	
P4.10	U/f curve mid point voltage	%	6,00	
P4.11	Output voltage at zero frequency	%	3,50	
P4.12	Identification current	%	50	
P4.13	Motor stator voltage drop	%	0,00	
P4.14	Low switching frequency	kHz	5,0	
P4.15	Change switching frequency threshold	Hz	5,00	
P4.16	Low noise modulator		1	
P4.17	Motor smooth start		1	
P4.18	Smooth start time		9	
5 – INPUT SIGNALS				
P5.1	Start upward		1 (DI1)	
P5.2	Start downward		2 (DI2)	
P5.3	Preset speed B0		4 (DI4)	
P5.4	Preset speed B1		5 (DI5)	
P5.5	Preset speed B2		6 (DI6)	
P5.6	Run Enable		0 (DI7)	
P5.7	Brake 1 signal		8 (DI8)	
P5.8	Brake 2 signal		0	

Par.	Description	Unit	Default	Value
… following INPUT SIGNALS				
P5.9	Evacuation		3 (DI3)	
P5.10	Identification by No Speed		0	
6 – OUTPUT SIGNALS (for CONFIGURATION see BELOW)				
P6.1	Relay output 1 content		1	
P6.2	Relay output 2 content		3	
P6.3	Digital output content (Open Collector)		4	
P6.4	Digital An/Out content		3	
P6.5	Relay output 1 ON delay	s	0,00	
P6.6	Relay output 1 OFF delay	s	0,00	
P6.7	Relay output 1 Inversion		0	
P6.8	Relay output 2 ON delay	s	0	
P6.9	Relay output 2 OFF delay	s	0	
P6.10	B5 Board: RO1 relay output content		4	
P6.11	B5 Board: RO2 relay output content		4	
P6.12	B5 Board: RO3 relay output content		5	
P6.13	Analog output function		0	
P6.14	Analog output minimum		0	
P6.15	Analog output scale	%	100,0	
P6.16	Analog output filter time	s	0,00	
P6.17	Frequency supervision		1	
P6.18	Frequency supervision value	Hz	30,00	
7 – PROTECTIONS				
P7.1	Earth fault protection		2	
P7.2	Motor stall protection		0	
P7.3	Motor stall delay	s	5,0	
P7.4	Motor stall minimum frequency	Hz	15,00	
P7.5	Thermal protection of the motor		0	
P7.6	Motor ambient temperature	C	40	
P7.7	Motor cooling factor at zero speed	%	40,0	
P7.8	Motor thermal time constant	M	45	
P7.9	Response to thermistor fault		2	
P7.10	STO Alarm		1	
P7.11	Parameter Lock		0	
P7.12	Maximum advanced contactor opening number		20	
P7.13	Input phase protection		0	
P7.14	Input phase fault max. ripple		18	
8 – AUTORESET				
P8.1	Automatic reset		1	
P8.2	Trial time	s	60,0	
P8.3	Wait time	s	3,0	
P8.4	Automatic restart tries		3	
9 – EVACUATION				
P9.1	Evacuation mode		2	
P9.2	Maximum evacuation frequency	Hz	5,00	
P9.3	Current read delay	s	3,0	
P9.4	Switching frequency	kHz	3,0	

DIGITAL OUTPUT CONFIGURATION

The digital outputs (relays, Open Collector) and the analogue output used as digital (P6.1 ÷ P6.4) can assume the following functions::

0 = Unused output
1 = Inverted fault
2 = Fault
3 = Brake control
4 = Motor contactors control
5 = Frequency supervision

NOTE: When an output is programmed as frequency supervision (e.g. motor speed control), the parameters defining the output switching values are as follows:

P6.17 = 0 No supervision
= 1 Output ON at low frequency (lower than P6.18) (DEFAULT)
= 2 Output ON at high frequency (higher than P6.18)

P6.18 = Frequency switching value (Default = 30Hz)

11 – FAULT MENU

In this MENU you find the ACTIVE FAULTS and the FAULT HISTORY.

11.1 ACTIVE FAULTS

When a Fault appears, the display with the name of the fault starts to blink.

The most common fault messages are listed below. Be careful not to reset the alarm or fault without first having investigated the problems that caused the protection function to trip.

Always put OFF the run command before resetting any fault.

To reset operation, press the BACK/RESET button for a while.

1	Overcurrent: The inverter has detected excessively high current.
2	Overvoltage: DC voltage of the intermediate circuit is above the specified limits.
3	Earth fault: The current measurement system has detected that the sum of motor phase current values is not equal to 0.
8	System fault: Component fault. Defective operation. Braking resistor not connected.
9	Undervoltage: DC voltage of the intermediate circuit is below the specified limits.
13	Inverter undertemperature: Temperature of the heat sink is lower than –10°C.
14	Inverter overtemperature: Temperature of the heat sink is above 90°C.
15	Motor stall: The motor stall protection has tripped.
16	Motor overtemperature: The motor temperature module of the inverter has detected overheating of the motor. The motor is overloaded.
17	Motor underload: The motor underload protection has tripped.
19	Power overload: reduce the load.
25	Watchdog fault: Microprocessor fault.
30	STO disabled: The alarm display can be disabled by means of P7.10, if STO is used as Enable (P5.6= 9)
35	Application error
41	IGBT Temperature: The IGBT overtemperature protection device has detected excessively high short-term overload current.
50	Current at the analog input is < 4mA.
51	External fault: Fault signal at the digital input.
53	Field bus fault: The data connection between field bus Master and field bus board is interrupted
54	Field bus interface fault
55	Thermistor
59	Run error: no speed command received after 5 seconds from direction command.
60	Levelling response: Anticipated stop referred to low speed. Car reaches floor while still decelerating.
61	Low current. Brake timeout. Motor current too low and brake fails to open.
64	Low reference: With a speed level active and below the DC electrical braking start frequency (P3.4), the inverter stops and, after three trips, this error code is generated.
68	Anticipated opening of the contactors: (See Alarm 68 NOTE) Contactors between inverter and motor opened before the end of the electrical DC braking current.
69	No Enable: It can occur only If you use the ENABLE input (P5.6=4), indicates that the Enable input has not been activated within 2 seconds from contactor command.
72	Brake Open NOK: one safety brake input control has not detected the brake opening after a command
73	Brake Close NOK: one safety brake input control has not detected the brake opening after a command
78	Time out enable: the ENABLE input is active, without direction and speed commands
80	System Software not correct
81	Low voltage configuration not correct - Active in evacuation The inverter hasn't got the correct configuration to operate with low voltage.

Alarm 68 NOTE After 20 trips of this alarm, the drive goes out of service and you have to press the BACK/RESET button for a while to resume the operation.
Eliminate the malfunctioning by delaying the contactors opening. If you can't do this (for example, in lifts with manual doors, where people opens the car door while car is stopping, set parameter P2.15 to 1.
If the alarm still occurs, please contact SMS.

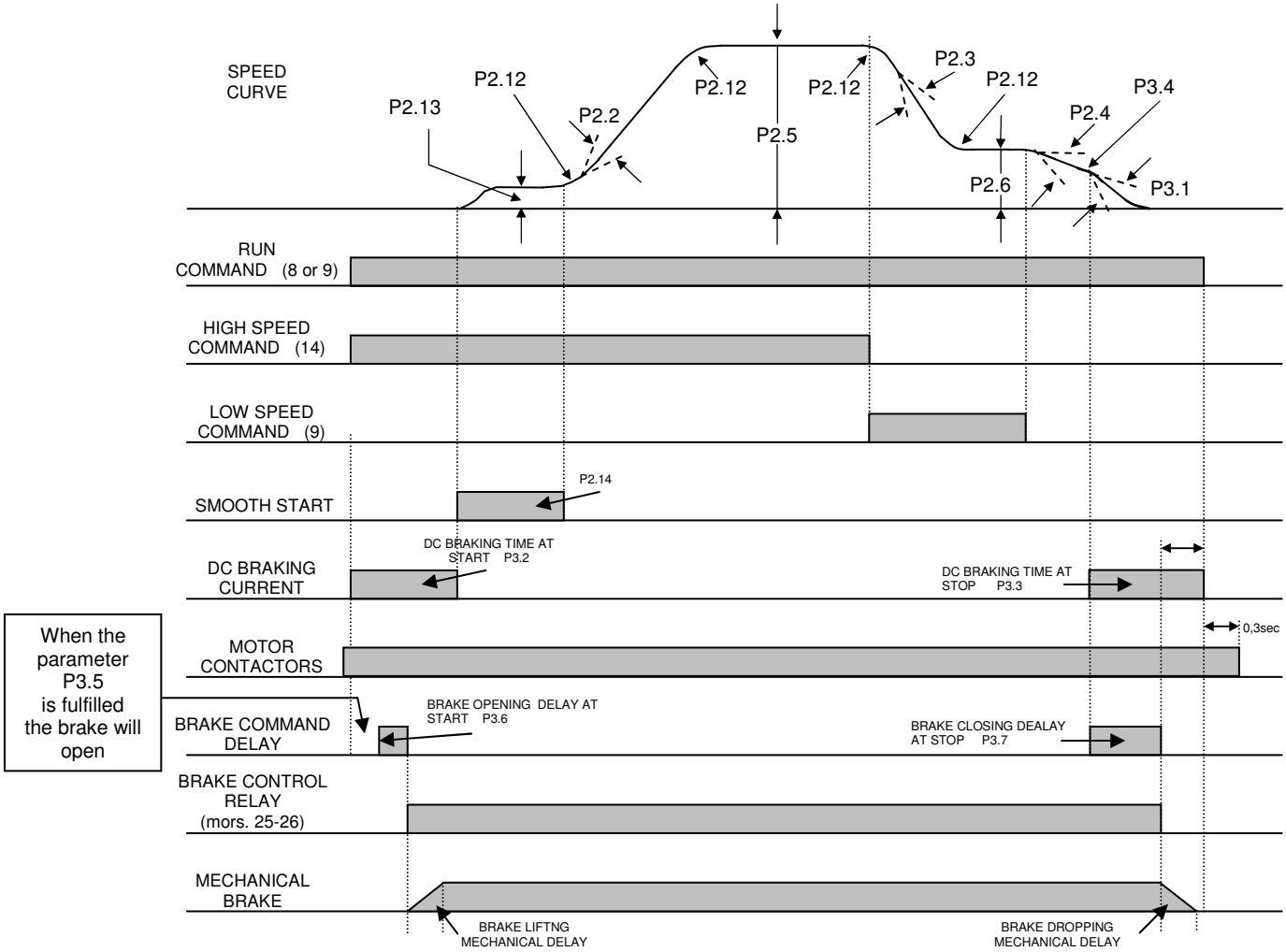
11.2 FAULT HISTORY

10 latest Faults are stored in the FAULT HISTORY.

Select the FLT Menu, moving the menu indicator on the left, a letter S will appear.
Press OK and then eventually the LEFT ARROW until the display shows F6.1: this is the first fault stored in the memory, ie the last occurred in the time, press OK to see the CODE.

Press BACK/RESET to go back to F6.1 and then LEFT ARROW followed by DOWN ARROW to go to the next fault F6.2, and so on to scroll down all the faults stored in the memory.

12 – ADJUSTMENTS



Before attempting any adjustment or modification of the parameters, proceed as follows:

12.1 – SET THE MOTOR DATA IN PARAMETERS P1.2/3/4/5/6

- If the motor speed is not known, or if the nominal value on data plate is 1500 rpm:
  - if the motor is 1 or 2 speed, or for conventional ACVV regulator, set 1350/1380 rpm
  - if it is for a VVVF speed regulator, set 1440 rpm.
- If the cos phii value is not known:
  - if the motor is 1 or 2 speed, or for conventional ACVV regulator, set 0,76
  - if it is for a VVVF speed regulator, set 0,80.

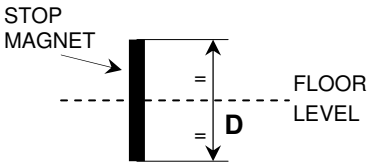
12.2 – PLACE THE DECELERATION COMMANDS AT A DISTANCE FROM FLOOR AS INDICATED IN THE TABLE

(GREATER THE DISTANCE, MORE SMOOTHLY THE LIFT SYSTEM WILL OPERATE)

DECELERATION DISTANCES TABLE			
Lift system nominal speed (m/s)	**0.7**	**1.0**	**1.2**
Required deceleration distance (mm)	**1000**	**1400**	**1700**

In addition, position the stop switch centrally with respect to the floor.

The STOPPING DISTANCES TABLE shows guideline values to consider in order to define activation distance of the stop switch (or switches):



STOPPING DISTANCES TABLE			
Lift system nominal speed (m/s)	**0.7**	**1.0**	**1.2**
Total stopping distance (D) (mm)	**60**	**80**	**100**

The stopping adjustment is performed using the inverter parameters as indicated below (Heading **11.7–5**).

12.3 – SET THE EXACT VALUES FOR MAXIMUM FREQUENCY P2.1 (CORRESPONDING TO THE NOMINAL SPEED OF THE LIFT SYSTEM) AND NOMINAL SPEED (HIGH SPEED) P2.5.

12.4 – ADJUST THE INSPECTION FREQUENCY P2.8 IN SUCH A WAY THAT CAR SPEED DOES NOT EXCEED 0.63 m/s.

12.5 – ALWAYS ENSURE THAT THE FREQUENCY VALUES SET IN PARAMETERS P2.1 AND P2.5 ÷ P2.11 ARE COMPATIBLE WITH THE NOMINAL MOTOR FREQUENCY.

For example, gearboxes may be equipped with motors whose rated frequency can be 30Hz, 38Hz, 45Hz, 55Hz, 60Hz, etc.

12.6 – AUTOTUNING (or IDENTIFICATION)

After setting the correct motor data, **it is essential to perform the IDENTIFICATION routine**.

- Set parameter **P1.7** to **1** and transmit a call command: the contactors energizes, the brake doesn't open, and on the keypad appears the "RUN" message.
- When the "STOP" message appears, deactivate the call (e.g. by opening the operation valve). At the contactor de-energization, the parameter P1.7 automatically returns to 0.
- The boost parameters are now updated.

If you modify any motor data, it is essential to perform the IDENTIFICATION routine again.

12.7 – FINAL ADJUSTMENTS

After having performed the operations described in points 11.1/2/3/4/5/6, test the lift system and if necessary perform the following checks and adjustments:

IMPORTANT Always change no more than ONE PARAMETER AT A TIME

1 - Adjust **starting** by means of the following parameters:

		JERK	CONTRA-ROTATE
P3.6	Brake open delay	▲ ▼	▲
P2.13	Smooth start frequency	▼	▲
P2.14	Smooth start time	▲	▲

The departure must be "smooth", without sudden movements or opposite rotations.

If an higher torque at starting is needed, increase the value in **P4.10** by 1 or 2 units, checking that the motor current in low speed is a bit higher than the one in high speed, but it doesn't exceed the nominal current of the drive.

If the lift system doesn't work as expected, contact the SMS Technical Support.

2 - Ensure that motor rpm is as requested and speed is constant at **high speed.**
If the speed is not constant (fluctuating) adjust parameter **P1.4**. (motor speed), reducing or increasing the rpm number.

3 - Now check the **deceleration phase**: the lift must reach the floor after covering a short distance at constant speed (max. 10 cm) without any fluctuation or vibration, and maintaining the same speed both in up and down travel, with the car full or empty.
Adjust the distance travelled at low speed by means of parameter **P2.3** (Deceleration time).

4 - **If the motor stops when the deceleration phase terminates,** and the car is unable to reach the floor, adjust the following parameters:

P1.4	Motor speed	▼
P4.10	V/F mid point voltage	▲
P2.6	Low speed level	▲

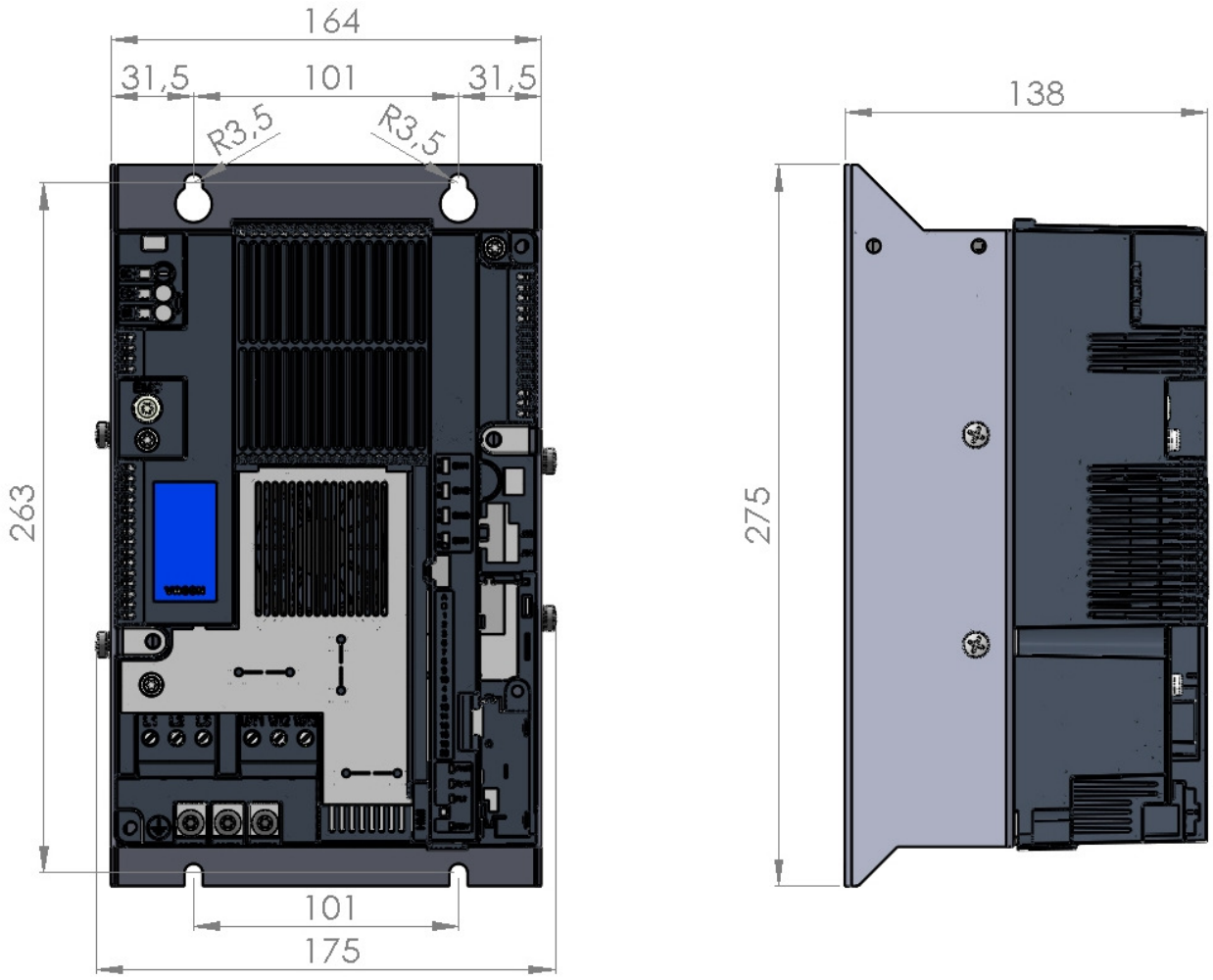
5 - **On arrival at the floor** the alignment between floor and car is not perfect:

The parameters to adjust are:		Stops **BEFORE**	Stops **AFTER**
P2.4	Final deceleration time	▲	▼
P2.6	Low speed level	▲	▼
P3.4	DC Current Frequency	▼	▲

If **the stopping level is different in LOAD or NO-LOAD condition**, increase the value in **P4.10** as indicated in 12–7.1

IMPORTANT
For the low speed frequency, we recommend a value of approximately 1/10 of nominal frequency: e.g. 5Hz in the case of a nominal 50Hz motor.

13 – DIMENSIONS AND MOUNTING HOLES



For further information and advice contact:

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VACON
DRIVEN BY DRIVES

DECLARATION OF CONFORMITY

Manufacturer's name:	Vacon Srl
Manufacturer's address:	Via Roma, 2 I-39014 Postal (BZ), Italy

We hereby declare that the following product

Product name:	Vacon 20 AC drive
Product Identification:	VACON0020-3L-a-b-c +d +e a = 0001 – 0008; (Frame Size 2) a = 0009 – 0016; (Frame Size 3) b = 4, 5; (Voltage Rating) c = CP, X; (Enclosure option) +d, +e = Additional Codes
Product Safety Functions:	Safe Torque Off (EN 61800-5-2:2007) and Emergency stop (EN 60204-1:2006 + A1:2009 + AC:2010 in extracts)

Complies with the following EU legislation: Low Voltage Directive (LVD) 2006/95/EC, Electromagnetic Compatibility (EMC) 2004/108/EC, EC Machinery Directive 2006/42/EC.

Notified body that carried out the EC type examination:

TÜV Rheinland Industrie Service GmbH,
Alboinstr. 56, 12103 Berlin / Germany

Certification Body for Machinery NB 0035, Certificate No. 01/205/5215/12

The following standards and/or technical specifications referenced below were used:

EN 61800-5-2:2007

EN 61800-5-1:2007 (LV Directive compliance)

EN 61800-3:2004 (EMC Directive compliance)

EN ISO 13849-1:2008+AC:2009

EN 62061:2005+AC:2010

These products are intended for installation in machines. Operation is prohibited until it has been determined that the machines in which these products are to be installed, conforms to the above mentioned EC Directive(s).

Signature

Postal, 03.05.2012

Andrea Perin
Country Manager